TMF

THE MAC FLYER-For Greater Safety in MAC Air Operations

December 1987

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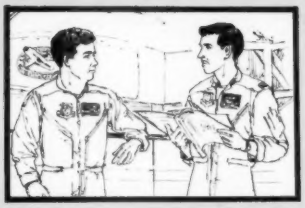

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Gen. Duane H. Cassidy	Commander in Chief
Brig. Gen. Floyd E. Hargrove	Inspector General
Col. Thomas M. James	Director of Safety
Maj. Thomas C. Weinzierl	Supervising Editor
Capt. Donald L. Rosenberry	Associate Editor
Mrs. Frances A. Caldwell	Writer/Editor
Mr. Tom O'Laughlin	Art Director

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GENERAL CASSIDY'S HOLIDAY MESSAGE

GENERAL DUANE H. CASSIDY, CINCMAC

The holiday season is a special time for all Americans. It's the time of year we celebrate our good fortune and look hopefully to the future.

MAC folks the world over can celebrate the holidays with an extra feeling of pride. As always, MAC's strategic, tactical, special operations, aeromedical evacuation, weather, and audiovisual organizations and people were deeply and professionally involved in every aspect of our nation's defense. No other command is as widely involved in projecting our nation's forces—no other command's active duty, Guard or Reserve forces could do it as well.

MAC men and women have also carried on MAC's long history of life-saving and humanitarian service. From fighting forest fires in the western U.S. to rescuing people from a burning ship in the Gulf of Mexico and a hotel in Puerto Rico, MAC people willingly endangered their own lives to save others.

But, as we look at our accomplishments over the last year with a much-deserved feeling of satisfaction, let's resolve to make next year even better. Let's work harder, safer, and smarter. Let's do everything we can to protect resources and lives, so we can all look back at the same time next year at another outstanding year in MAC's history.

Mrs. Cassidy and I extend our warmest wishes to you and your families for a safe and joyous holiday season.

FLYER CALL

We wish we had some good safety news to report for 1987, but it just wasn't a good year for MAC. Due to new reporting procedures, flight safety statistics for 1987 stretched only from 1 January to 30 September. During that short time, MAC experienced 5 Class A (over $500,000 or a fatal injury) and 3 Class B ($100,000-$500,000) mishaps. The result is a Class A rate of .88 and a Class B rate of .53 per 100,000 flying hours. MAC's 1986 Class A rate was .52 mishaps per 100,000 flying hours and the Class B rate was zero.

As bad as these numbers look, however, the real tragedy lies in the 10 crewmembers, one passenger, and one person on the ground who died as a result of these mishaps. Twelve good people, 12 husbands, fathers, sons, and brothers drove to work one day and never came home again. Their sacrifice is all the more tragic when we realize that in most cases, the mishaps were caused by human error. A little more caution, a little more study, a little more self-examination, may have prevented a wasteful loss of life.

Now may be the best time, in the midst of the holiday season when we're surrounded by the warmth and love of our families, to examine how we do and feel about our job. How committed are you to doing your job safely and professionally? Aviation is very unforgiving of mistakes. Be prepared.

TCW

The Results of Ignoring Bird Condition Red

Let me tell you a little story . . . .

By 1st Lt. Robert T. McSpadden
Peterson AFB, Colorado

Grandpa Tolbert always loved telling stories to his grandchildren late at night. Together with the low nightlight and warm bedcovers, he never failed to send them into a world of safe dreams. He could remember telling the same stories to his son Frank, years ago. After a while, Grandpa felt there were enough tales in his mind to last a lifetime of kids. Grandpa Tolbert was, you see, the best storyteller in the whole world, or so believed young Frank Junior and his sister Tina.

For almost four years now, we had talked about when and how to tell them, but the right time never seemed to arrive. The questions would come, several in a week sometimes, and sometimes none for months, but there was always a feeling between Grandpa and his grandchildren that the questions were never fully answered. I would usually sit in the large rocking chair near the window when Grandpa got to telling his stories, reliving my own childhood days when *my* father put *me* to bed. In a way Grandpa and my father were quite alike, but the man starting yet another tale was always the one the kids called Grandpa. His son Frank had always been proud of that.

Typically, nothing foretold Grandpa's story would be much different this time. The kids would usually say something like, "Tell us about the monster and the princess," and Grandpa would take that single sentence and weave a world of make-believe that always captured your imagination. It was Frank Junior's turn to start tonight, and when he said, "Tell us about birds and airplanes," Grandpa cocked his right eyebrow up a notch. It was his way of showing an idea had tickled his mind. The old man slowly ran a hand through his tangled beard. He began.

"The bird is one of my favorite

HONORABLE MENTION
1987 MAC FLIGHT SAFETY WRITING CONTEST

creatures on this earth. In the early days of life, the bird was thought to carry great messages from some power way above, a power watching over everything and everyone. It was a great spirit among the early people, for one very simple reason. You see, the bird is the only thing we know, except for that fly on your nose Tina, that can fly through the air at its own will. If you were a bird, you could soar through the great canyons and speed through valleys. You could dip your wings with the slightest touch, grab the currents and float into the sun while people below just watched with envious amazement. At night you could pick out the highest of ledges and sleep where nobody else ever slept. If you were a bird, trees, clouds, and mountains would be your best friends, and everything else down below would have to wait until you were ready to visit.

"The birds, of course, will never be outdone. In the wintertime birds up north get a little too cold and pack up for vacation. What's interesting about the great birds of the North—the majestic snow geese, and the proud Canadian honkers—is they always invite their neighbors along on trips. During the coldest months I have seen great flocks of geese flying south on vacation, the wise old birds up front doing the driving and the mothers, fathers, and kids in the back, all riding through the sky. What a wonder it is to see these birds disappear into clouds, with nothing other than their instinct to guide them, coming out again right on course.

"How easy it is to see why, eventually, people on the ground began to take a little more notice of birds. To be able to fly with the wind at a moment's notice, to go anywhere at anytime and not worry about roads and valleys and hills to drive around. Ah, what a feeling it must be to fly like a bird.

"And so, one day somebody tried to figure how birds did it. There are great tales, hidden on dusty bookshelves, of men who tried and failed to imitate birds. Some of them thought if they just flapped their arms fast enough they could fly like a bird. Others, still smarter like your mama over there, tried to gather feathers and glue and make wings to strap on their arms. Most of the time these attempts at catching the wind ended with men sprawled on the ground in pain, but some actually did float for a while before falling down.

"The birds, of course, all thought this was a great show—creatures bound to the earth trying to fly like them. They would spread the word that yet another person had made a new set of wings, and birds would fly in from miles around to watch the unsuccesful try. It eventually got to be a great gathering for birds, always mocking those who were not meant to be in the air. But one day, something happened!

"One day a man came to one of the country villages with a contraption he promised everyone would fly like the birds. It was made of wooden braces and looked kinda like a huge hawk with wheels nailed to its feet. In the middle was attached a makeshift seat, where the man said he would sit once the "bird" was in the air. And so from miles around the townspeople gathered for the big day when Jon O'Henry, that was his name, would fly his machine up there with the birds. Of course, the birds themselves had all come from miles around to witness the big event. There were flocks of ducks, geese, doves, quail, sparrows, and every other kind of bird you could think of, all flying over the big grass field where this O'Henry fellow said he would fly. And you know what?"

"What?" said Tina.

"He did it! He flew this machine up there with the birds and around the field and when he was all done he brought that wooden bird right back down to the ground with nary a scratch to himself or his contraption. And today, well, that's what we call an airplane.

"Now it seemed to the birds this was a great day. Finally somebody down there figured out a way to get up and stay in the air without falling down with a big bang. It was, after all, such an easy thing to do it seemed somebody should have figured it out long ago. Of course, there were a few disappointed birds—someone else had figured out how to soar through the air, but the general feeling was that no matter the kind of machine, nobody was ever going to have the freedom to do what they could."

Grandpa looked at the ceiling and then back at his grandchildren, both so wide-eyed you could slip a quarter between their eyelids. He glanced over at me with a strangely serious look, and somehow I sensed a shiver run down the old man's spine. When the kids prodded for Grandpa to go on, he folded his large hands together and drew in a little closer for the anticipated ending.

"Well, let me tell you a little story about someone I once knew who wanted nothing more than to fly just like the birds. As a boy he talked all the time about being able to soar like the eagles, without anything attached to his arms. But that, as all birds and you and I know, could never happen. As he grew older, the boy, we'll call him Frank, began to realize the only way he was going to fly was to get into one of those airplanes and give it a try. And so on

his sixteenth birthday, Frank asked his dad to drive him to the local field where they both had seen some airplanes. It was a great day in Frank's life, and if he couldn't grow wings and fly like the birds, then this was going to be the next best thing. For years he had dreamed of leaving the earth and all of its seemingly minor problems behind, and going up where only wind and stars and of course birds were. And on this very day, that is exactly what Frank did, he rode in an airplane.

"Well, by now it was pretty much routine for birds to see people in these strange looking machines flying through the air as if they knew exactly what they were doing. There was, after all, plenty of room for everyone in the sky, and for the most part everyone got along just fine. After Frank's first flight he knew he would never be happy doing anything else, so he set off on his own to be a pilot and discover the world. When he came back home, Frank was a slender young man of 19 years who had some 100 flights to his name, in all sorts of various airplanes. His dad was happy to know he had grown up the right way and found something he really liked doing. And the stories, oh well, the stories Frank would tell when he came home after long trips almost made his dad wish he were a bit younger and could try this flying stuff himself.

"He would talk of how great it was to be up there with the birds, soaring around in airplanes and flying even higher than eagles in some of the newer machines. And eventually, as his dad had hoped he would, Frank met the girl he wanted to marry. With her he also shared the stories of how strangely alone and comfortable he felt when flying through the air, the way I imagine most people who fly do. He also said he felt a certain friendship with the birds, who had been flying for so long and who could still do it freely. The feeling of safety also grew, and it almost seemed that after a while Frank wore his airplane around him like the skin and feathers of a bird. A few years later, Frank and his bride decided to have children, and it was shortly after the second one was born that Frank's wife received a telephone call.

"For almost seven years now Frank had been flying airplanes for his country, something he felt was a great idea because it made him proud and also helped feed the family. He never talked much to his wife about some of the problems he ran across while in the air, and she never worried since he always seemed so happy and confident this was what he was meant to do.

"But the phone call Frank's wife received that day carried some very unexpected news. It seemed Frank had taxied his airplane onto the runway for takeoff, something he had been doing routinely since that golden summer day on his sixteenth birthday, 17 years ago. It was a sunny mid-October day and flocks of Canadian geese were already making their way south for the winter. He remembered the tales his father had told him when he was just a boy, and as he watched a small flock of geese land on a pond just off the runway, Frank knew again how lucky he was to fly with the birds. Slowly he ran his engines up, and the big transport with a full load of military cargo rumbled down the runway. As Frank's wings caught the air beneath them and lifted from the earth's grasp, the birds that had just landed jumped from the water as if to join their friend in flight. But neither Frank nor the geese could see how close they were getting to each other. There was a big loud bang when the first goose hit one of Frank's engines and soon after, three of the four engines were knocked out by the geese. Frank tried to keep the airplane flying, but it was slowly settling back to the ground. The birds were watching helplessly as the boy who had always dreamed of flying looked upward to the sky one last time. There wasn't time to think of what he was leaving behind, and Frank's last memory was probably of the first time he had been able to join the birds in their world. Today, hopefully, he is still up there where he belongs."

Grandpa looked down at his grandchildren, who instead of sleeping were lost in tears, and then he looked back at me. I too, had not been able to keep my sorrow in, but in the moment we looked into each other's eyes, there was some peace. Finally, Grandpa Tolbert had answered the question the only way he knew how.

After graduating from the University of Houston in 1984, 1st Lt. Robert T. McSpadden entered Officer Training School at Lackland AFB, Texas. Upon commissioning in November 1984, he was assigned to Reese AFB, Texas, for Undergraduate Pilot Training. Lt. McSpadden completed UPT in November 1985 and assigned to Detachment 4, 1401 Military Airlift Squadron, Peterson AFB, Colorado, where he is currently flying the C-21A.

FLYING SAFETY WITHOUT ACCIDENTS

The greater the professionalism, the fewer the errors . . .

(Editor's comments: The following is a translated adaptation of a safety article originally printed in *Aviatsiya i kosmonavtika*, 1985. When we read this article, we immediately thought of the old saying "the more things change, the more they stay the same." Only in this case it can be modified to "the more different we think we are, the more alike we probably are." In spite of tremendous differences in American and Soviet ways of life, and in our political, geographical, and cultural backgrounds, human factors and frailties affecting flight safety are quite similar. To point out similarities, we've italicized portions that could have come out of any air forces' mishap reports, including our own.)

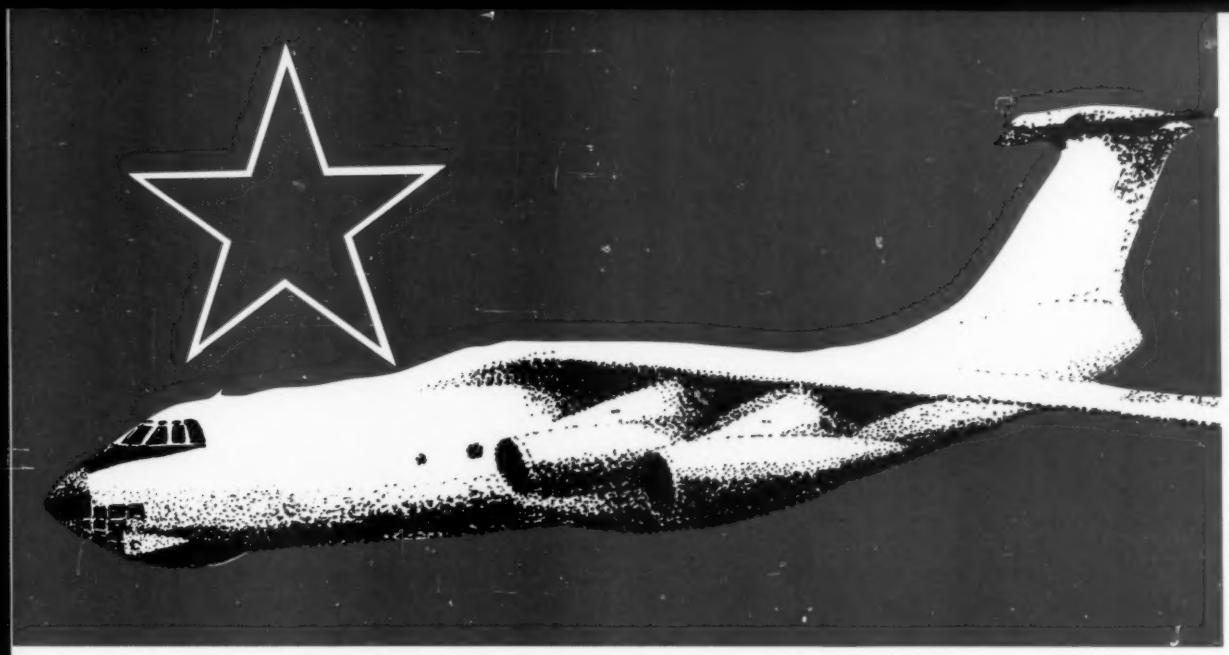
* * *

The calendar year is drawing to a close. In all units and subunits, final combat training results were tallied up and tasks assigned for the new training period. The job skills of pilots, navigators, and specialists in the aviation engineering service and support subunits are increasing from one flight to the next. The experience of vanguard units indicates there is nothing better than an intense work pace to promote flying without air mishaps or the conditions leading to them, motivate people to continuously search for ways to ensure flight safety, and, as they say, force one to toe the line at all times.

Practice and theory prove that air mishaps are caused by a variety of factors. These include personal factors, which show up as mistakes, and flight rule violations by people involved in organizing, preparing, conducting, and supporting flight operations; technical factors, such as malfunctions in aircraft engines, equipment, and systems; and factors that cause external, unpredictable effects on aircraft and crews. The principal causes of air mishaps and the conditions leading up to them, connected to mistakes by flight personnel, include the errors and lack of discipline of crewmembers in the air, deficiencies in organizing flight operations and air traffic control, and poor-quality preparation of aircraft.

One easily notices that an air mishap, or a situation leading up to one, directly depends on the professionalism and efficiency of the aircrews. The greater their professionalism and efficiency, the fewer the errors and infractions: for the commander—in organizing flight operations, for the pilot—in executing the flight, and for the mechanic—in preparing the aircraft. The proper monitoring of each flight is also important. This makes it possible to detect an error at the very outset and to correct problems promptly. Here is an example. In an aviation unit they analyzed flight data recordings in a disorganized manner, with gross violations of flight regulations. Over a three-month period, they failed to discover situations caused by pilot error that led up to air mishaps. Results were soon to come: An aircraft crashed while on a landing approach. This is understandable. If the flight recording had been carefully analyzed, it would have been readily noted that the pilot had previously made errors on his landing approaches.

I'd especially like to emphasize the importance of proper flight planning and post-flight analysis. Every commander should know how to best use the capabilities of his men to improve flight safety. You see, a pilot, having spent a lot of time in training, may still fly only a single training sortie at the end of a flight operations shift. Of course, such an approach



to things is unwarranted. It is dangerous to clear for takeoff an officer who has spent an entire flight operations shift on the flight line. Wherever people remember well that safety is founded largely in planning, they do not commit such transgressions.

Experienced commanders should have not only flyers but also specialists from the support subunits attend the post-flight analysis. Flyers' blunders are analyzed using charts and diagrams that illustrate pilot errors while they're still fresh in people's minds, and exhaustive recommendations are made on how to act in a given situation. When organized in this manner, the post-flight analysis becomes a genuine school of professional expertise.

In organizing and planning flights, commanders must ensure that flight assignments correspond to pilot training levels and proficiency ratings. As a rule, a disparity between the level of proficiency and the difficulty of assignments leads to haste, overpaced training, the toleration of errors, and a lack of supervision. Commanders, while trying to meet schedules at any cost and make up for lost time, begin to ignore flight regulations, flight manual requirements, and findings based on many years of experience. Pilots who are not fully prepared are still sometimes permitted to fly training missions, and inexperienced officers are allowed to work air traffic control.

Also important is the ability of crewmembers to work independently during the hours of preliminary flight training. Experience shows that flight safety depends on this a great deal. Training time is specified by the daily schedule, and its quality is evaluated during the readiness check. *The success of a flight and, therefore, flight safety, is determined ultimately by the objectiveness of the commander's evaluation.*

High professionalism and efficiency are derived from the instruction and education of the ranks and their overall training. This becomes possible only with well-equipped training facilities, highly trained instructors and trainers, and correctly organized party and political work. Deficiencies in training methods make the instruction process drawn out and unable to ensure the acquisition of adequate knowledge and skills. The experience of vanguard units attests to the effectiveness of a method where the flight commander works right in the aircraft cockpit or on the flight simulator with his pilots, manual in hand, and at the end of the practice session, tests his men on the whole range of flight tasks they will be performing. *Rehearsing a "flight" in the simulator cockpit provides the opportunity to reestablish lost skills, especially if there has been too long a layoff on certain types of training. Special attention is devoted to practicing responses to the most dangerous emergency situations.*

The psychological factor is also very important in simulator drills, since an officer rehearses a unique repertoire of emergency responses in case the air situation becomes complicated. A lack of stability of the mind and body leads to confusion and the loss of confidence, self-control, and the ability to analyze incoming information. The pilot begins to act hastily and in a confused manner, which when time is of the essence can prevent a safe outcome of the flight.

I recall an incident of a pilot who was on a night flight at weather minimums. The tower instructed him to land his aircraft on the first approach, since

there was a thickening layer of haze at 200 to 300 meters. Upon turning onto his final approach heading, the pilot failed to switch to the automatic mode and was 70 meters low as he approached the outer marker beacon. At 3 kilometers from touchdown the tower informed him: "You are right on course, but below glidepath." After that, the pilot who was actually at 70 meters, cheerfully replied: "150."

Subsequently, he took his eyes off the instruments as he looked for the runway, and at 750 meters from the runway threshold the aircraft struck the elevated approach lights. It was sheer luck that this flight did not end in tragedy for the fortunate pilot.

The accident investigation board found one of the factors contributing to the accident was that an inadequately prepared pilot had been cleared for takeoff in weather minimums and that flight operations and air traffic control were poorly organized. Nevertheless, I feel that an important role in this accident was played by the pilot's lack of a proper attitude. In addition, his commanders and superiors had failed to evaluate his true proficiency. His proficiency can be roughly judged by the flight data tapes. The picture would have been clarified with an analysis of the pilot's procedures in the air. It was found, however, that not all command personnel in this outfit could correctly interpret flight data tapes and use the information to judge the proficiency of flight personnel.

The experience of units that have gone a long time without accidents or situations leading up to them convinces us that one of the conditions for success is when supervisors are highly demanding of themselves and their subordinates. An uncompromising attitude in flight safety and a feeling of responsibility for the task at hand should be combined with the ability to discover violations of flight procedures in a timely manner, to identifiy the guilty parties, and to determine punishment. Being demanding calls for rigorous execution of the orders issued by superiors and mandatory verification. This is not an expression of distrust but rather a necessity which should not be ignored. Sometimes in the crunch of daily activities, a commander is unable to verify the execution of certain instructions, and this affects flight safety.

The modern aircraft or helicopter is a weapon which demands teamwork. It is prepared by many specialists, and in flight is supported by a large number of electronic systems and support subunits; this represents certain expenditures of labor and materiel. *Performance deficiencies by a pilot or ground specialist can nullify the labor of a large team of people. Only when all aviation personnel have a strong sense of responsibility is it possible to achieve smooth operations and excellent combat training results.*

The unit headquarters performs an important function in organizing training. It is a unique nerve center, which handles the planning and organization of the life and activities of the flying outfit and verifies the execution of orders, instructions, and documents. The headquarters staff makes plans for combat and political training and notes ways to master aircraft better and faster to attain maximum safety on every flight. The specialized services also make a definite contribution to the common cause, but we feel that the corresponding headquarters staffs have a good deal to accomplish to free more time for ground preparation and commander training to ensure that flying hours are used as effectively as possible. There will then be an increase in the hours logged annually by pilots and, as a result, their professional expertise will increase.

Flight safety should be achieved not solely for safety's sake, but to achieve excellent results in combat training with minimum risk. This assumes that a scientific organization of labor is incorporated in the units and that standard training methods are used across the board. You see, the same element of flying procedures is sometimes taught differently in neighboring regiments, especially in military education regiments. Methods councils must pay special attention to this. A lack of uniformity in training methods affects the quality of flying procedures and can lead to unexpected problems when mastering new elements and types of flight procedures.

Experience proves that wherever high job proficiency is combined with firm military and flying discipline, wherever firm observance of regulations prevails, air mishaps and the situations leading up to them have been eliminated. Confusion in an aviation unit or garrison carries over, as a rule, to the airfield, and directly affects combat readiness and flight safety. Situations that lead to air mishaps are inevitable in such an outfit. Figuring that the discipline of subordinates directly depends on the discipline of the command personnel, one can judge a unit's smoothness of coordination and combat readiness from the attitude of supervisors toward the assigned task.

Intense training is underway at airfields, in classrooms, and on ranges. Aviators are striving to do their best on all assigned tasks. Precise rythym and efficiency of combat training are inseparably linked to flight safety. Ensuring flight safety and finding new ways to improve it are the business of every person wearing the blue shoulder pads. The solution of these problems will make flying safe, without accidents. ✈

★ ★

A Letter From Santa

S. Claus
#1 North Pole, 99999-1111

Supervising Editor
The MAC Flyer
Scott AFB, IL 62225-5101

Dear Sir,

Enclosed please find my entry for the 1988 MAC Flight Safety Writing Contest. Being the world's oldest surviving aviator, I thought it was time to make my contribution to flight safety. Let's face it, with only one flight per year, I'm just a part-time flyer (although I'm still pretty darned good). With thousands of readers, each making several flights per *week*, you should be fairly flooded with hair-raising stories of narrow escapes, harrowing emergencies, and other tales of derring-do. Anyone who doesn't take time to send a story should be ashamed.

But, don't worry. I have my list and I'm checking it twice for all those aviators out there who could but don't send in a story. If they want anything for Christmas they better get busy *now*. Let them know Santa's watching. I mean business.

Merry Christmas to all,
S. Claus

Santa Claus

(Editor's Note: That's it folks, you've heard it from the big guy himself. Christmas is fast approaching and if you wish a visit from the one and only, you'd better put pen to paper and submit your entry **pronto**. Just follow **The Rules** below. Hurry, there aren't many writing days left 'til Christmas.)

THE RULES

The 1988 MAC Flight Safety Writing Contest is conducted according to MACR 900-3 and these rules. All entries must be original, unpublished, and postmarked no later than 31 March 1988. Stories must be between 1,000 and 3,000 words long (about 6 to 14 double-spaced typed pages). Poetry should be about 75 to 100 lines. Entries must contain an aviation safety/mishap prevention message. Manuscripts must be double-spaced, typed, and submitted in two copies. Identify entries by title only and attach a cover sheet showing the author's name, address, duty phone number, and unit. The cover sheet must also contain a brief autobiography.

The contest is open to anyone. Entries qualifying under these rules earn the author a free one-year subscription to *TMF*. However, contest prizes (desk sets and plaques) may only be awarded to military members and civilian employees of the Department of the Air Force or Air Reserve Forces. Other entrants may be selected for Honorable Mention in a special category. All winning stories will be published in *TMF*. Address entries to:

Flight Safety Writing Contest
HQ MAC/IGFE
Scott AFB, IL 62225-5101

Safety Workhorse—The FSO

Wrapping it all up.

We made it! This is the last in our twelve-part series. Our goal was to pick up where regulations leave off in an effort to provide techniques for building stronger flight mishap prevention programs. As promised, in this session we'll do a quick review of the highlights which we've clearly illuminated this last year, and then add some comments we've gotten from "the field." Back in January, we said we wanted to lend some insight into the not always self-explanatory guidance the 127-series offers. We began by emphasizing that safety is a command responsibility. The flight safety officer implements and monitors the commander's program. That program can only be strong when the commander is *obviously* "sold on safety."

February rolled around and we launched right into the series with one important element of mishap prevention—hazard reports. In a nutshell, hazard reports exemplify the spirit of safety itself—either eliminate, reduce, or highlight hazards, in that order. They are **NOT** a tool for pounding nails and should not be used to "hammer" people, regardless the error involved. Another issue at the heart of hazard report effectiveness is communication. Vindictive hazard reports elicit defensive responses which may not even address the hazard; after all, we're only human. There are a host of possible ways to process hazard reports, and as long as your method serves to keep the commander, submitter, and person solving the problem informed and/or on track, it's the right method. Remember, your objective is to do *something* about the hazard. Other handy little tidbits of information we passed along included some truly insightful options. Investigate thoroughly, as soon as you can. The older the issue, the harder the trail is to follow. Use the 151 as a worksheet, you'll end up writing notes to yourself anyway, so collate them here. When the OPR responds to the HR, check it! You'll be able to recognize a good investigation, and a good response—they *do* something to *fix* a problem. Finally, the most important part of any investigation— *follow up.* That's a recurring safety theme, and it's very important. It keeps you on top of the issue, everybody honest, and prevents embarrassing reaccomplishments. Wait a short while after the fix has been reported, then go look and see that it really was done. The final response will sound a lot better to you, your commander, and the hazard report's originator. A problem expediently and thoroughly resolved will engender faith in the system.

By Lt Col. Michael G. May and
Capt. Donald L. Rosenberry

March rolled in and we turned to 651s—Hazardous Air Traffic Reports (HATR). Our first big bullet was that HATRs don't need FOUO classification nor are they Limited Use reports. In our incredibly informative style, we launched right into the program. Pointing out that HATRs are there to identify any weaknesses in our system relating to aircrew and air traffic control, the main emphasis in a HATR investigation must be capturing fleeting information and evidence. Due to the time-sensitive nature of evidence (ATC tapes are erased in 15 days) and aircrew testimony (which has a tendency to fly away) many HATR investigations must begin before the ink dries. HATR investigations are a team effort. They require close cooperation with ATC reps, aircrew members, base operations folks, civil engineers (the infamous snowplow on the runway), etc. The key is to jump into the process immediately. After finding the answer, the next key step is communicating action taken or recommended to the originator. Not always easy! A thorough investigation stands on its merits, and logical conclusions will normally satisfy the originator. The last, and most important step, is *follow up.* Make sure recommended actions are taken; proposed procedures put into effect. Don't waste a good investigation with poor follow up. Reports, reports, reports—safety revolves around reports.

The April issue focused on investigations and their product—the mishap report. The core of the process is thorough, complete investigation. The best way to achieve that is to follow the guidance in AFR 127-4 to the letter. This includes keeping the promise of confidentiality with your information sources by not releasing information to unauthorized people. The heart of the report is formed by findings (listed chronologically), causes (that are really causes—not results), and sound practical recommendations that apply only to causal findings. Not an easy process, but hey, if it was easy, anybody could do it.

May brought us to some real serious business; namely Nuclear Surety and Hazardous Cargo. Let's face it, improper handling of either will ruin your whole day. Of course, Nuclear Surety is one of MAC's highest priorities. We must have professional crewmembers do the transporting, and it's essential to report certain malfunctions of nuclear certified equipment. AFR 127-4 and TO 00-35D-54 form the heart of CAT I MDR, DULL SWORD reporting. We also addressed SAFE HAVEN support procedures as outlined in TO 11N-J45-51 and emergency nuclear airlift operations described in MACR 50-16 and appropriate 55-series regulations. These require constant review for those FSOs in flying units without a nuclear airlift mission. The Personnel Reliability Program described in AFR 35-99 also received some scrutiny. The goal of PRP is to limit access to nuclear components to properly certified people only.

The most important aspect of hazardous cargo handling is the need for the FSO to be familiar enough with it to handle any inquiries in situations where he will be called upon as the expert. Exercises or contingencies can place you in the position of having to be the "answer man"—be prepared.

"Ancillary requirements" and Bird-Aircraft Strike Hazards were June's center of attention. Those "ancillary requirements" are high interest areas outlined in AFR 127-2. These are areas that present problems which need closer monitoring. MAC adds two for the FSO— the flightline and firefighting. Your operation may demand adding other areas to the list. Air Force spells out several others—life support facilities and training programs, low-level routes and drop zones, unit and transient aircraft maintenance operations, assigned and attached unit flight facilities, briefings and meetings, and the airfield manager's daily inspection. No safety operation can survive without meetings, and those which FSOs should attend are spelled out. ATC board, FOD prevention committee, and standardization, evaluation, and training meetings all fall within the FSO's purview and demand his presence.

One of the most demanding and constantly changing problems the FSO faces deals with our "fine feathered friends." That's why Air Force requires you to read and heed AFR 127-15, *The Bird Strike Hazard Reduction Program.* The meat of the program is contained in Section Four, "Developing an Effective Bird Strike Hazard Reduction Program." Each base has its unique bird problem—that's why the Reg covers the bird strike threat with a rather broad brush. The FSO has to study his unique problem and come up with his own unique solution.

Exercises are an ever-present part of the MAC environment, and the July issue covered them and their more rare cousin, contingencies. The main focus was checklist development using a wide range of pubs and regs designed to cover

the wide variety of operations and safety problems you'll face "in the field." Rather than go through the entire process of checklist building, we'll reiterate a quote from MACR 28-2 that sums up the article and the problem quite well: "Particularly significant is the avoidance of shortcuts and procedural deviations which may seem justified under the pressure of the mission."

Inspections and evaluations are never easy for the inspector or the inspectee, but August tried to ease the inspector's pain by pointing out some techniques to help him and the unit he's looking at. Evaluations are a valuable tool and the evaluator should truly look at his mission as one of assistance, not admonishment. The best place to start is with AFR 123-1, MACSUP 1, Chapter 12. Since that's what the MAC IG uses to evaluate programs, it obviously is the logical evaluation tool. ORI/UEI reports are other great sources of things to look for. With a helpful attitude, constructive suggestions, and thorough follow-up, evaluations and inspections will lose their feared image and be seen by both sides as learning experiences.

Aero Clubs can be either the bane or the joy of an FSO's existence. September examined the Aero Club risk and the necessity for FSOs to become involved—deeply and with a commitment to get some dirt on his hands. Remember: no commitment, no result—and no safety program! You'll have to dig info and guidance out of safety office files, previous inspection reports, AFR 215-12, and from higher headquarters. Aero Clubs offer FSOs a tough challenge; especially since some of the pilots you're dealing with are very inexperienced and their attitude toward flying is a little different than yours. So, they need a different approach to safety. If you dig in you'll find them eager to learn and do a good job.

Total Safety—all safety disciplines working together—was October's topic. It's easy to isolate flight safety from other safety disciplines under the day-to-day press of work. Don't. Nothing in safety can stand alone for long and thrive. The nature of MAC operations demands close cooperation between flight, ground, explosives/hazardous cargo, and the nuclear surety folks. We each have to know enough about the other guy's job to fill in if necessary. We need to detect problems in one area that can affect another area. There isn't always a ground safety or explosives safety expert around, and there are bound to be occasions when the FSO will be *the* person who must have the answers. Talk to the people in the other disciplines about what could most affect the flight safety arena. Go with them on inspections to see what problems they look for in the workplace, explosives storage area, aerial port, etc. Effective safety relies on a total team effort—not a parochial, "you do your job—I'll do mine" approach.

Meetings, meetings, meetings; we get "meetinged" to death. (So it seems at times.) But, as FSOs, safety meetings are an outstanding tool for getting the job done well. So, November looked at the importance of meetings and ways to make them more enjoyable for the audience as well as for the FSO. The key is to package meetings attractively, imaginatively, and get the message across. There are a variety of ways to do this—the only limit is your imagination.

Positive feedback on this series hasn't been overwhelming, which we take to mean FSOs read the articles and put the material to work, grateful for the advice but too busy to let us know how they feel about it. Lack of negative feedback reinforces this belief. Like much of what we do in safety, we may not get a direct response, but there is evidence the message is sinking in. Mishap numbers have shown a steady decline since modern safety programs began, and, with professional FSOs and crewmembers doing the best they can, those numbers will continue to decline. Will we ever get down to zero mishaps? Probably not. All you can do is keep your personal stats at zero—if everyone does their best to do the same, we just might make it after all.

Flying-Hour Milestones

10,000

Lt. Col. Presley W. Donaldson, 181 TAS
CMSgt. Alvin E. Hendrickson, 118 TAW
MSgt. Daviad E. Doyle, 326 MAS
MSgt. Anton C. Mojwid, 326 MAS
MSgt. Joseph M. Willman, 326 MAS
MSgt. Donald W. Graves, 181 TAS
MSgt. David E. Doyle, 326 MAS

5,000

Col. Clarence J. Bryant, 710 MAS
Lt. Col. John M. Danahy, 326 MAS
Lt. Col. William M. Guy, 181 TAS
Lt. Col. Joy L. Leonhardt, 136 TAW
Lt. Col. Lawrence A. Moulton, 143 TAS
Lt. Col. Rafael J. Perez-Guillermety, 181 TAS
Lt. Col. Robert C. Spear, 75 MAS
Maj. John A. Burke, 326 MAS
Maj. Richard T. Carson, 18 MAS
Maj. Harrison A. Dunlavy, Jr., 136 TAW
Maj. Alan R. James, 312 MAS
Maj. Warren S. Mclennan, III., 76 MAS
Maj. Paul S. Skabo, 312 MAS
Maj. Warren J. Wetherbee, 326 MAS
Capt. Christopher E. Beery, 41 RWRW
CMSgt. Robert C. Raksnis, 326 MAS
SMSgt. Joseph P. Billoni, 711 SOS
SMSgt. Rodney R. Martin, 18 MAS
MSgt. Donald P. Baustert, 326 MAS
MSgt. Raymond F. Craft, 326 MAS
MSgt. Charles H. Horner, III., 326 MAS
MSgt. Roger D. Jarvis, 326 MAS
MSgt. Ralph A. Kellenberger, 326 MAS
MSgt. Harold L. Lamma, 326 MAS
MSgt. Ibrahim S. Madanat, 326 MAS
MSgt. Allan J. Miller, 326 MAS
MSgt. Albert L. Hurlbutt, 95 TAS
TSgt. David F. Eddings, 41 MAS
Sgt. Barry A. Lennon, 18 MAS
Sgt. Michael Zavisho, Jr., 18 MAS

2,500

Capt. Mark C. Noyes, 71 ARRS
MSgt. John A. Diaz, 301 ARRS

Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.

Maj. Gen. Paul A. Harvey

REFORGER 87

Bigger (and safer) than ever.

by Maj. Thomas C. Weinzierl
Supervising Editor

"You guys need to get out more." So spoke Brig. Gen. Floyd E. Hargrove to *TMF* staffers when he became MAC Inspector General. Taking his words to heart, I planned a trip to REFORGER 87 to see how the "typical" MAC crewmember copes with the strains of the annual Return of Forces to Germany.

After making my way to Dover AFB, Delaware, via 375th Aeromedical Airlift Wing C-9A to Andrews AFB, Maryland, and a limo ride, I found I'd be traveling ACM on a C-141B commanded by Maj. Donny E. Griffin, 707 MAS (Assoc), Charleston AFB, South Carolina. After a thoroughly pleasant and professional flight, I rediscovered one thing that never changes in MAC—jet lag. But, after landing at Ramstein AB, Germany, catching an afternoon nap and relaxing over dinner, I looked forward to the next day's main event, an interview with Maj. Gen. Paul A. Harvey, 322d Airlift Division Commander and REFORGER Commander of Airlift Forces (COMALF).

The next morning, after making my way to his office on the Ramstein flightline and a very cordial greeting, we jumped right into a typical in-depth *TMF* interview.

TMF—General Harvey, what do you believe is the most important aspect of REFORGER for MAC?

General Harvey—Very definitely safety. Safety of the crew. Safety of the mission. Safety of the people we move. This particular REFORGER is different than those in the past from the standpoint we're doing the vast majority of it with commercial airlines—about 85 percent versus 15 percent organic MAC aircraft. We'll be going into commercial aerial ports of debarkation or APODs. We haven't done much of this previously. We'll be working with about five primary APODs during the deployment and about three prime APODs during redeployment. So, to that end, we're working into big international airports with their heavy mix of civilian aircraft—widebody commercial jets. For some of our aircrew members, this might be the first time they're working in this type of environment. That's the strategic side I'm concerned about. Safety for our intratheater guys is another concern. We'll have an air-to-air interface out of several bases and we've already done a sea-to-air interface out of Rotterdam where we took the equipment off the ship and transshipped it right onto C-130s and moved it to the forward area. The intratheater aspects—sea-to-air, air-to-air and the employment phase—have been going very, very well. Right now we're talking 98 percent U.S. reliability and about 100 percent German C-160 reliability. So in any of those areas—flight safety, ground safety, explosives safety—we're moving explosives too—safety is very important to us.

TMF—So it's been a much wider scope of operations than in the past?

General Harvey—The biggest yet. We're moving roughly 34,000 troops. In past REFORGERS we've moved about 15 to 16 thousand. It's a very significant change in the way we've done things.

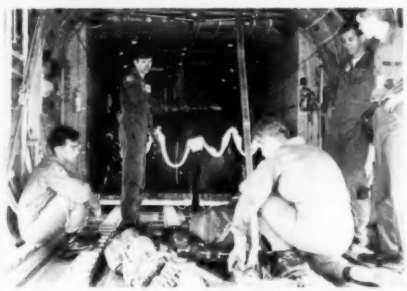
TMF—What is your greatest concern as COMALF for this exercise?

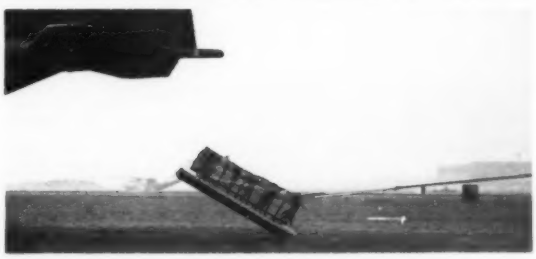
General Harvey—Weather. Diversions—people going into fields they've never been to before. This time of year in Europe the weather is pretty good, it's not something you really have to worry about, although there is often fog and some low scud that burns off later in the mornings. But last minute diversions can cause not necessarily confusion but a change in our set procedures in the cockpit. My folks here at 322d and the crews need to get all the information they can as early as possible so decisions can be made as soon as possible. The weather aspect is a big concern from the safety point of view. I'm not too concerned about runways, obstructions, or clearances. These civilian aerial ports are much like ours. However, I do consider foreign marshallers a problem—I'm concerned about how well they know our safety rules. Their clearance criteria are different than our criteria. Many of our APODs have an international flavor. A good example is Schipol. We'll have Dutch people doing ground marshalling. We'll have our ALCE people doing some of that as well. We'll have Army Reserve crews working the Army side of it. Our active duty crews will be flying the C-130s. Into that international mix of people, we'll throw in ERO operations. We're going through some very stylized procedures to make sure all our people are checked out in international ERO procedures.

TMF—During any exercise or contingency there may be a perception by some crews that some of the normal rules don't apply. How should crewmembers balance demands of an exercise against flight safety in unusual situations?

General Harvey—Some people say we should throw out the book on safety during wartime. I can't think of a more important time to employ good safety practices. The worst thing you can lose in a wartime environment is an asset. The most important asset is our people. A fatality is *the* most destructive thing. Without people, all other assets lose utility. I definitely put people first. There's no reason this exercise should be any different. There's nothing we do which warrants breaching safety. As COMALF, I want to assure every crewmember in this theater that they would never be second guessed for

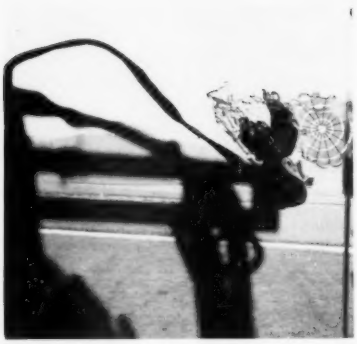
Left to right: Fuel bladder ready for onload. Loading the bladder pump unit. Hooked up and ready for filling.





Above left and right: Combat control team provided a vital link. "It has to work right the first time."

Right top: LAPES-drogue out approaching the EZ. Right: Right on the money.



Above left to right: Almost there—main chute on the way out. Over the EZ—load on the way out. Another one in the zone. Right: A tailgater's view.

pursuing everything on the side of safety. There's no exercise in the world worth that.

TMF—As 322d Air Division Commander, what's your advice to crewmembers new to flying in the European theater?

General Harvey—To remember that while English is the language of aviation, you might not always hear it on the radio. You'll be working with many controllers, across many countries, in a very short time period. It's like anything else new—you need to make sure you have all the inputs ready before you need them. Be prepared. That's in every phase of flight—en route, en route descent, and handoff to RAPCON for whatever kind of approach you'll be flying. That's my main concern about flight operations. Crews won't be spending all their time in the air, however. Europe is a great place to have a good time and enjoy the camaraderie of your fellow aviators and to meet people from other countries. That presents other problems. Some of the best highways in the world are in Europe, especially in Germany and the BENELUX countries. Driving speeds on these highways are high—100 to 120 mph are common. Our people need to be careful about that. Alcohol is a very definite part of the European lifestyle, much like America. The legal age for drinking throughout most of Europe is 16, so alcohol becomes a factor. As COMALF, I'm worried about our people on the ground and in the air. In a nutshell, from the time they come beyond 10 degrees east they're ours. They're our responsibility and I don't want to lose anybody.

TMF—What do you believe is the biggest obstacle to flight safety in the 322d area?

General Harvey—Weather, language, the proximity of sovereign countries, all combine to make flying hazardous. In Europe, unlike the U.S., you can pass through 3, 4, or 5 countries in one day. All are sovereign and view the world differently. We must remember we're guests here. We have to be extremely careful in what we do.

TMF—Any final comments, Sir?

General Harvey—It's been an interesting REFORGER. Never before have our crewmembers been such a big part of it. This goes for our civilian counterparts as well. There are five new aspects to this year's exercise: the numbers of troops we've brought over; we've moved them primarily by commercial air; we've had the troops draw their pre-positioned assets to a far greater extent than before; we've chopped them to the NATO commander, in this case a British four-star; and most importantly, we've been observed by Warsaw Pact and Russian observers. It's an international demonstration of the ability of free nations of the world to protect and defend freedom. It's a definite demonstration of U.S. and allied resolve, which is what REFORGER is all about.

TMF—Thank you, General Harvey.

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After General Harvey's interview, I made my way to Rhein-Main AB outside Frankfurt for the next important part of my journey. I was scheduled to fly the next two days with the 37th Tactical Airlift Squadron out of Rhein-Main, in order to get a feel for the pace and routine of this year's REFORGER.

Following a standard MAC oh-dark-thirty get-up, I strolled down to the 37 TAS building where I met Capt. Richard Henry and crew and got briefed on the day's mission. We were to fly to Bitburg AB, pick up two fuel bladders loaded with 1,000 gallons of JP-4 each, and fly to Wunstorf, a German Air Force base near Hanover. The fuel bladders, officially the Aerial Bulk Fuels Delivery System, are used to transport fuel to frontline units and can offload fuel to trucks, tanks, helicopters, or other aircraft. They can carry up to 3,000 gallons each.

The flight to Bitburg was smooth, with only a little ground fog obscuring the early-morning German landscape. Loading went pretty much according to plan, with only some unexpected training of fuels personnel on the bladder system slowing things down a little. According to ritual, we welcomed the break to sample the culinary delights of the Bitburg flight line snack bar. So, with the airplane loaded, and our bodies fortified with the best the snack bar had to offer, we were soon on our way.

As we made our way north, we descended over Taunus VOR for a low-level route to destination. Being a former C-5 type, this "up close and personal" part of the mission was a real eye-opener. We completed the leg with a landing on a grass strip at Wunstorf, something else C-5 guys, like me, don't see much of. We offloaded the fuel into a German Air Force fuel truck and I watched as Captain Henry fired up the Herk and took off. I remained at Wunstorf to talk to deployed MAC folks and watch a LAPES (low altitude parachute extraction system) later that afternoon. Maj. Mike McClellan, MAC rep with the Army's III Corps, and Capt. George Cunningham, MAC rep with the 2d Armored Division, both at Fort Hood, showed me around and discussed their end of REFORGER. "Cooperation with the Germans has been outstanding. They've given us anything we've asked for," said Major McClellan. The afternoon culminated with my first close-up view of a LAPES as part of a mixed crowd of Americans, Germans, and British Public Affairs reporters. LAPES naturally draws a lot of attention. Captain Henry picked me up on his second fuel bladder mission of the day and I flew back to Rhein-Main, impressed with the day's activities and eagerly awaiting the next.

The next day dawned a carbon copy of the first. The get-up was a little later—I actually made my way to the 37th building in daylight. This was the day I'd been waiting for. Today I'd get a chance to see a LAPES from a different perspective—from *inside* the airplane. At the 37th I met Maj. "Stach" Stachelski and Capt. Mark Michel, both 435th Tactical Airlift Wing standardization pilots and one third of the wing's LAPES crews. I found they were the pilots on the LAPES mission at Wunstorf the previous day. The drop I saw was perfect—I knew I was in good hands. After the briefing, I had an opportunity to talk with Lt. Col. William E. Stevens, 37 TAS Operations Officer. Colonel Stevens described the 37th as "the theater's airdrop experts." The 170-man squadron does a lot of training with other units. They spend "training weeks" with units in Spain, Portugal, Great Britain, and Italy, gaining experience and exchanging information in a variety of environments.

The plan for the day was to LAPES a pallet holding two water containers onto the Wunstorf Extraction Zone, then proceed to Celle German Air Force Base to pick up some Army troops and return to Rhein-Main. Takeoff, climb, and cruise went smoothly. Twenty minutes prior to the drop I climbed down to the cargo compartment and strapped into a troop seat. Turning and descending into the clouds I couldn't determine our position until the rear doors opened and the pilot leveled off for the run-in. Soon the drogue chute deployed and I could see the ground behind us getting closer as we descended to the EZ. Then the main chute deployed and, with remarkably little additional noise, the pallet and its rubber doughnuts full of water slid out in a *hurry*. As I watched the pallet slide to a stop behind us, I was suddenly thankful for my tight seatbelt as Captain Michel pulled into a 20 degree, max effort climb. I was impressed.

A rainshower greeted us at Celle. The loading process gave me a little time to talk to Major Stachelski. "REFORGER gives us a chance to pack a lot of training into a short period. We do several LAPES in a few days rather than months apart." From what I saw, the practice has paid off.

My overall impression? Nothing has changed since I traded a throttle for a pen. MAC crewmembers are still professionals. Sure, they may still gripe about early alerts and the scheduler and billeting and the food in the club, etc. But they're good at what they do, and from what I saw at REFORGER 87, they're still the best in the business.

Unusual conditions require

Be Aware

"That was one of the sorriest examples of so-called crew coordination I've ever seen in a simulator or an airplane," said Mac MacKenzie to Capt. Mark Dunwood. "I was trying to help as

much as I could, but you just seemed to want to do everything yourself and wouldn't accept any other inputs. The simulator is the ideal place to work on crew coordination, problem-solving, and leadership. You were trying to fly solo in there."

"I guess you're right, Mac. It was my turn in the left seat, and I guess it's hard to break the old habit of running the show alone."

"Don't get me wrong, Mark, the AC runs the show all right, but he's definitely not alone. You just weren't maintaining situational awareness in the box today. A multiplace airplane isn't the place for the single-seat mode of thinking. It's natural in a stressful or high task load situation for the AC to feel compelled to take the controls. That's the way we're trained in UPT. In a trainer, there's really no other choice. But in a large transport, you'll soon be overloaded if you try to do everything yourself. You have to order your tasks and probably discard some that don't really have to be done. You also have to discard the hero's image of single-handedly saving the day.

"A couple of examples may help. An F-4 pilot experienced a fuel system problem resulting in a flameout. A nearby base advised him he was too low to make it to that field. He continued the approach and rolled to a stop at the lip of the approach end of the runway. He was given a hearty pat on the back and an 'Attaboy' for his feat. The following year six men died in attempts to imitate the same feat—good pilots and navigators who tried to imitate a hero rather than make their own evaluations of the situation and possibly jump out of bad airplanes.

"Another example concerns a civilian turboprop airliner. A ground crewman left an access door open, causing the airplane to vibrate severely after takeoff. The captain took the controls while the copilot advised tower they were returning to the field. The copilot and engineer did only what the captain directed. The captain was doing everything else himself. He had a reputation for being an 'I can handle it'-take-charge type of person. No one noticed the airspeed decay and the airplane stalled and crashed. The captain failed to coordinate, delegate, and manage the problem. The rest of the crew just elected to die with him rather than take positive action to help the situation."

"Hours and hours of boredom punctuated by moments of sheer terror—I guess he wasn't ready for the sheer terror part, was he?" asked Mark.

"No, I guess not. But the part about the hours and hours of boredom brings up another point. We've both spent hours in airplanes just cruising along, getting more bored and fatigued with every passing minute. Boredom sets in during periods of low activity. Boredom breeds a feeling of smugness, inattention to details, and attempts to take shortcuts. A lot of this is due to automation. Sure, all those black boxes have made our job easier, but they've changed the nature of the job from one of active control to one of monitoring and crosschecking. Humans like to be active and in control, not sitting back watching what's happening. What happens is the opposite of task overload, call it task underload.'

"Uh, I've never heard of that one."

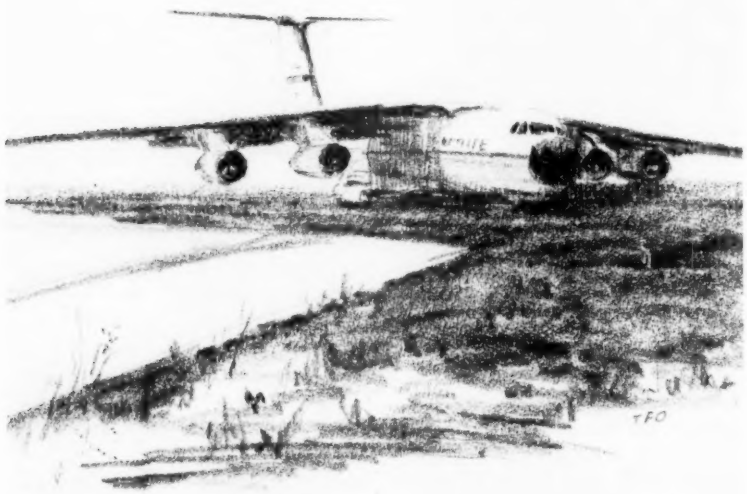
"Well, an example will highlight it. A foreign airline 747 was approaching the west coast. The crew was pretty tired. Of course, 'George' was flying. One engine flamed out and the airplane eventually stalled as 'George' maintained altitude. After the big bird stalled and rolled into a steep bank the autopilot disengaged. The pilot became disoriented, didn't believe his instruments, made the situation worse and ended up in a steep dive. He was able to recover, but the airplane suffered a lot of damage. The crew was fatigued and the droning along lulled them into a false sense of security. They weren't prepared to handle a problem. They let a relatively straightforward emergency develop into a life-threatening one. There's no easy answer for what's called the 'black-box syndrome' other than be aware of it—check and crosscheck. It takes discipline—automated systems decrease our workload, but you have to appreciate their limitations."

"Well, that wasn't the problem today. I was just overloaded."

"You *let* yourself get overloaded. But that's not the only overloading you have to think about. I was in the box once with a guy who kept overloading other people, especially the engineer. We were given a standard emergency problem shortly after takeoff, requiring return to the departure field. The guy in the left seat gave the engineer several things to do—standard stuff—engine shutdown checklist, dump fuel, figure landing weight, notify the load-

master, etc. As the engineer was trying to accomplish all this, the pilot kept interrupting him with other requests. The engineer was so completely overloaded he wasn't able to finish anything. He screwed up fuel dumping so bad he miscomputed landing weight by 70,000 lbs. The instructor said we'd have had a *real* hard landing. The pilot just wasn't aware the engineer was overloaded. About all he was doing was interrupting the poor guy. It's the pilot's job to delegate tasks and assign responsibilities. It's very easy for crewmembers to become engrossed in problem solving.

"Getting overloaded usually means getting distracted to the point you let really important things slip from your crosscheck. This happened to a pilot overseas recently. He made an 'approach flap' landing at an airfield with high gusty crosswinds. He'd briefed he would fly the approach 10-15 knots hot for crosswinds. Airspeed was varying widely during approach. The plane touched down well above computed touchdown speed. With the high airspeed, the airplane remained in ground effect well down the 8,000 ft. runway. The airplane finally stopped in the grass past the overrun, 90 degrees from runway heading. The pilot said he wasn't aware of his high airspeed. Here was a 'good pilot' who let some extreme conditions get the best of him. He let circumstances control him and got sucked in because he'd made landings under similar conditions before, but every flight is different; weather is rarely exactly the same from day to day. An approach flaps approach and landing aren't something you do everyday. Unusual conditions require unusual procedures, and that should lead to unusual caution. Even slight deviations from the norm require intensified concentration. One distraction leads to another, and before you know it, you're overloaded and something falls through the crack."



"Where was the rest of the crew while this was going on?"

"Well, I guess they were just along for the ride. The crew is there to help, but sometimes they need a little reminder. Use your crew, give them specific duties, that way they'll not only perform those duties, but they'll feel more a part of the team and speak up about other things they notice. You have to promote communication. Don't make crewmembers afraid to speak up. Others may be thinking the same thing or noticing the same problem, but may be afraid to bring it up lest they look or sound foolish. Hey, we depend on each other for survival too much to be afraid to speak up. Some ACs intimidate their crewmembers so much they foster an attitude of 'I'll do my job, you can go to you know where.' You can't afford to waste resources and talent like that. You'll end up doing your job plus thinking you have to check on everybody else. Before you know it, you're in a hole you'll never get out of—overloaded again."

"Boy, I thought flying one airplane was like flying another. Trainers were never like this, even with green students."

"Well, it doesn't really take too long to get the hang of it, and there are plenty of good ACs that set the example. Just remember a few critical points. Maintain aircraft control, set priorities, avoid tunnel vision, recognize situations where your crewmembers can become overloaded, and delegate, delegate, delegate.

"C'mon, it's time to get back in the box; let's see if I can practice what I've been preaching."

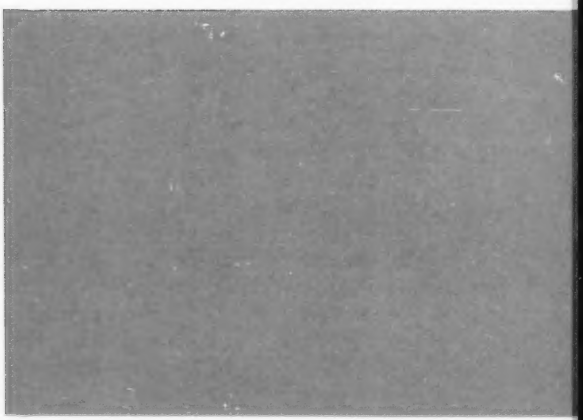
Left to right: 2nd Lt. Glenn A. Baker, 1st Lt. David A. Hopkinson.

1st Lt. David A. Hopkinson, Aircraft Commander., and 2nd Lt. Glenn A. Baker, Copilot, Det 2, 1401 MAS, Wright-Patterson AFB, Ohio, were flying Swift 21, an operational support airlift mission from Wright-Patterson AFB to Dobbins AFB, Georgia. As they climbed through FL 220, the C-12F's pilot's side window *exploded.* The force of decompression ripped the headset off Lieutenant Hopkinson's head, sucked his gloves, watch crystal, and aircraft sun visor out the window. Although stunned, Lieutenant Hopkinson quickly recovered, disengaged the autopilot, and started an immediate descent. Lieutenant Baker donned his oxygen mask, declared an emergency, and handed Lieutenant Hopkinson his oxygen mask. When Lieutenant Baker checked the passengers, he realized their oxygen masks had not automatically deployed so he quickly remedied that by activating the manual override. Since verbal communication was impossible, the crew had to accomplish checklists by pointing to the items on the Data Nav 4 screen. Lieutenant Baker would write all ATC clearances and point them out to Lieutenant Hopkinson. Although the crew had initially received an ILS clearance to one runway, they elected to land on a different one since winds were calm and approach time shorter. The landing was uneventful. This crew's thorough knowledge of emergency procedures, prompt actions, and calm composure under pressure prevented a potentially tragic mishap. We at *TMF* applaud their actions.

AIRCREW TRAINING SYSTEM

Training in the future.

By Capt. Donald L. Rosenberry
Associate Editor



(*Editor's Note*—Special thanks to the brains behind this article, Lt. Col. Edward J. J. McGann, former Chief, Training Technology Division, 34 TATG, Little Rock AFB, Arkansas, and Maj. Darrell Logan, current C-130 ATS Project Officer at Little Rock AFB. They took time from their busy schedule to answer some very uninformed questions with interesting, informative answers that form the bulk of this article. Without their help, and the technical editorial assistance of Maj. Alan W. Russell, C-130 ATS MAC program manager, this article would never have made it off the ground. From all of us at *TMF*—a heartfelt thanks!)

The Aircrew Training System (ATS), as it is developing in MAC, is not the first ATS, nor is it likely to be the last. The first Air Force ATS resulted from KC-10 acquisition. We needed trained aircrew members, and American Airlines was the only group training them. By comparison, the KC-10 ATS, and the follow-on C-5 ATS (run by United), are smaller than the C-130 ATS.

The KC-10 ATS trains only pilots and flight engineers; the C-5 ATS, while training other crewmembers, still excludes navigator and loadmaster crew positions. The C-130 ATS is thus quite different—it trains a whole crew and runs the whole spectrum of training, and is the first ATS to train aircrews in a tactical environment.

Four significant events led to the Aircrew Training System. In 1982, the Scientific Advisory Board, in one of their periodic summer studies, addressed MAC's aircrew training. One recommendation coming from that study was to apply "state-of-the-art technology" to the training process by building a "model aircrew training system (MATS)." This refers to using automated information systems, including Computer Based Instruction (CBI), Computer Managed Instruction (CMI), and Computer Aided Instruction (CAI), as well as new training philosophies. C-130s appeared an ideal test bed for this new training process, due to the breadth of the C-130 mission and maturity of the existing program.

Next, Office of Management and Budget Circular A-76, suggesting a "civilianization" of the Air Force, specifically mentioned non-combat oriented career fields such as simulator operation, maintenance, and support functions.

In 1985, Air Staff converted 80% of simulator instructor authorizations to civilian positions based on AFR 26-1 (mission essentiality).

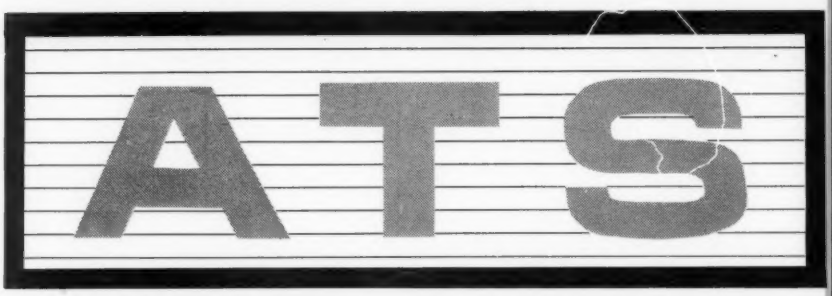
Also in 1985, then-CINCMAC Gen. Thomas M. Ryan directed acquisition of aircrew coordination training to instill a common philosophy throughout the command.

These four events converged in developing and implementing a new program to train C-130 aircrews. During the conceptual phase, this program was envisioned as a three-step path: an encompassing feasibility study, a partial implementation, and finally, a full-scale implementation, presuming sequential success.

In 1983, MAC, working with Air Force Human Resources Laboratory (AFHRL), contracted Seville Training Corporation to develop the C-130 MATS. The objective was to obtain state-of-the-art training technology through contractor-developed curriculum. This system was to serve as a generic program for all MAJCOMs. It also served as a research vehicle for transfer of training and learning strategy studies. In an effort to provide reality to the report, an O-6 steering group monitored the progress, ensuring Air Force and MAC needs were thoroughly addressed. Their final report came out in the fall of 1985. The report envisioned a four-phased program, but in July 1985, with the first two phases completed—develop and define objectives and system design specifications—Air Force decided to procure a total contracted ATS. Under the leadership of HQ MAC Acquisition Team source selection, the Technology Training Division of the 34 TATG, headed up by Colonel McGann, provided technical assistance to HQ MAC Acquisition Team during source selection. It required horizontally

expanding the acquisition process to include all necessary components to run a complex training program. A contract was to be let to a single contractor covering hardware, software, courseware, personnel, and services—everything involved except flying.

Four bidders responded, and the Singer corporation was awarded the contract. Singer's program team includes: Simuflight Corporation (Aircrew Training) and Allen Corporation (ISD/Courseware development), and Lockheed Corporation.



SO WHAT EXACTLY IS ATS?

ATS is unlike any training program current MAC aircrew members have experienced. The contractor is responsible for all ground training: formal schools, special qualifications, continuation training, simulators, everything except classified training, military-unique requirements, and flying. We'll still use military instructors (aircrewmembers) for the in-flight training, but the contractor is still in charge; that is, Singer is contractually obligated to produce a quality product, i.e. a qualified C-130 crewmember. Naturally, Air Force is telling the contractor what it wants, including defining the final product, but the contractor will schedule flights, design flight profiles, and make recommendations for further training/checkride. While instructor inputs are key factors, ultimate training responsibility rests with the contractor. Likewise, actual training methods will be decided by the contractor, be it more flights, simulator training, exercises at a personal computer station, text use, additional classroom discussion, whatever they determine is appropriate (again, with AF approval). This means students will proceed through the aircrew training system at their own learning rate. Students will report to the contractor for all training; of course, there's a military structure to handle all personnel and other military requirements. An additional requirement built into the contract specifies instructors will be former aircrew members actually qualified in the crew positions they'll be teaching with a minimum of 200 instructor hours, and a recency of no more than five years. So any worry you may have about the demilitarized focus of training is curtailed early on—this was a well thought-out contract.

Continuation training, as mentioned earlier, will also be a contractor responsibility. This training has traditionally taken a back seat to almost everything, but priorities are changing. Now the contractor will be responsible for maintaining crewmember proficiency. The motivation? The same contractor is also responsible for producing quality product graduates of upgrade training courses (AC, Instructor, etc.). So now we're talking real proficiency maintenance, not a steady-state execution of minimum number of events. In addition to insuring one repeats an event to proficiency, it will eliminate practicing events at which one is already proficient—significantly more efficient and cost effective. The exact methodology doesn't exist yet, though Singer says they know how. One of the tools is a Training Management System (TMS). This little jewel (still on the drawing board) is a scheduler's dream. It will provide automated scheduling, accounting for what the student or crewmember has done and what they still need to do, in addition to airframe availability and other variables. It will also provide automated scheduling and optimum mission profile construction.

The contractor's goal is to produce a quality product—a trained crewmember. But what is "trained?" In formal schools, one is 'trained" when evaluated and pronounced at or above standards. The questions continue—what evaluation, a flight evaluation? This ever-present and familiar standardization tool will remain in use with ATS, but it isn't enough. In addition, the course specified will have many other means of evaluating the student. A discussion of courses is in order here.

Training courses draw from a master task listing (MTL) that outlines every task crewmembers must learn to do his/her job. From that exhaustive listing, a functional task listing (FTL—a smaller list of tasks required for a specific course) is developed. The FTLs, in turn, are used to develop numerous training objectives. Only 10% or so of training objectives for a single course are evaluated on end-of-course checkrides. What about the other 90 percent? How do we determine if students really can perform well? In the current method, a military instructor, current and proficient in the job he's teaching, constantly evaluates, without consciously thinking about it. So, weak areas are im-

mediately fed back, training modified, and the problem resolved. With the onset of ATS, this evaluation process has been formalized by contract. Singer is required to develop a means of evaluating students against each training objective. However it's done, by computer feedback during self-paced instructions, evaluations in academics, or other methods, students must demonstrate proficiency, which will be evaluated and recorded by the contractor.

The result of all this development is about to come into being, and with it a restructuring of the C-130 world, with respect to training. Anticipate massive changes at the Little Rock "Schoolhouse," but not just there, the fun is coming to your town soon.

There are six bases with C-130 simulators: Little Rock, Pope, Dyess, McChord, Kirtland, and Clark. These simulators, now Air Force-run, will be turned over to the contractor (though still Air Force owned). This is pretty clever. If the simulator breaks down and the Air Force is running it, that would relieve pressure on the contractor. But because the contractor is responsible for simulator operation, maintenance, and support, and they still have to produce that quality product—trained crewmembers—they will be motivated. In addition to these six bases, three others: Rhein Main, Yokota, and Elmendorf will receive courseware and appropriate hardware (but not a simulator) to accomplish training. Crewmembers at these locations will continue to go to one of the simulator-equipped bases for that phase of training, but will get all other ground continuation training at home station. In addition, there are approximately 50 more sites for Reserve, Guard, and 23d Air Force that are contract options the Air Force can purchase as funds become available.

There's some pretty hefty specifications in the contract about courseware. For example, consider how long it takes to incorporate a change to a procedure, say a MACR 55-130 revision. The new courseware will be updated with current changes involving safety, TCTO modifications, or critical items within 72 hours locally or 7 days system wide, by contract. This is pretty important, since aircraft modification, like enhanced SKE, can result in some healthy procedural alterations. Will actual flight requirements change? Again, this is up to the contractor (in coordination with MAC DOT/DOV). The contractor will submit their proposed changes to current requirements in MACR 51-130 as determined by their system (courseware) development process.

SCHEDULE

When does all this theory and talk become reality? Well, it already is. The contract was let in April 1987. Courseware development is going on right now. Simulator refresher training will be picked up by the contractor NLT 31 Mar 1988. After that, the schedule calls for a step-by-step and continuation training process of transition to contractor courses in the formal school, with transition complete by the end of 1989. Courseware development is another area where the C-130 ATS is unique. The contract specifies courseware development will be accomplished at Little Rock. This gives Air Force oversight capability. In addition, selected Singer personnel may take orientation flights and interface in other ways with the C-130 mission, all to promote a more realistic course and enhance instructor ability and credibility. Obviously, it's up to the contractor to come up with the approved solution, but the Air Force will know early on if they head off in the wrong direction. This is very important because we can't just stop training while we fix a problem in courseware discovered the day it was "unveiled." Colonel McGann likens the transition from the current methods to the ATS to "changing horses at full gallop."

Another feature built into the contract references the future of ATS. Inevitably, all major MAC weapons systems will be run this way. Naturally, the Air Force Human Resources Laboratory (AFHRL) is and has been a part of the development of this system from the word go. There are, as a result, research options built-in that will permit AFHRL to evaluate training issues for C-130, Air Force, and DOD. This makes the C-130 ATS a realistic test-bed from which the Air Force can study and perfect Aircrew Training Systems throughout DOD. They'll look at such questions as how much training can effectively be done in the simulator—where's the line? Or how do you evaluate contract-delivered training? How effective is simulator "backward chaining" (a process where, for example, we start the student pilot at short final, run through 10-15 landings, then back up to a longer final etc.)?

THE BOTTOM LINE

What are we going to get—more highly trained formal school graduates? Well, that's not the goal. The goal is overall better trained crewmembers through more efficient use of available training resources. We expect a flattening of the saw-toothed proficiency curve we've all seen. This natural fluctuation in proficiency (high right after school, decline, then increase as the next training/upgrade is anticipated) will be replaced with a more efficient straight-line increasing proficiency.

QUICKSTOPPERS

IN MARTINIS OK—ON WINGS, NO!

Cold night at the airport. Captain decided to look over the right wing while the catering truck was at the galley door.

When he stuck his head out the galley door, he noticed ice cubes on the inboard portion of the wing. When quizzed about the ice cubes, the catering people said they were throwing extra ice on the ramp and some (two buckets worth) happened to land on the wing. They also said, "It's no problem." Captain calls ramp service and has them de-ice the right wing. Good decision, since the aircraft manufacturer doesn't usually test ice cubes on airfoils. If more pilots took such precautions, we probably would have fewer accident reports to read. . .

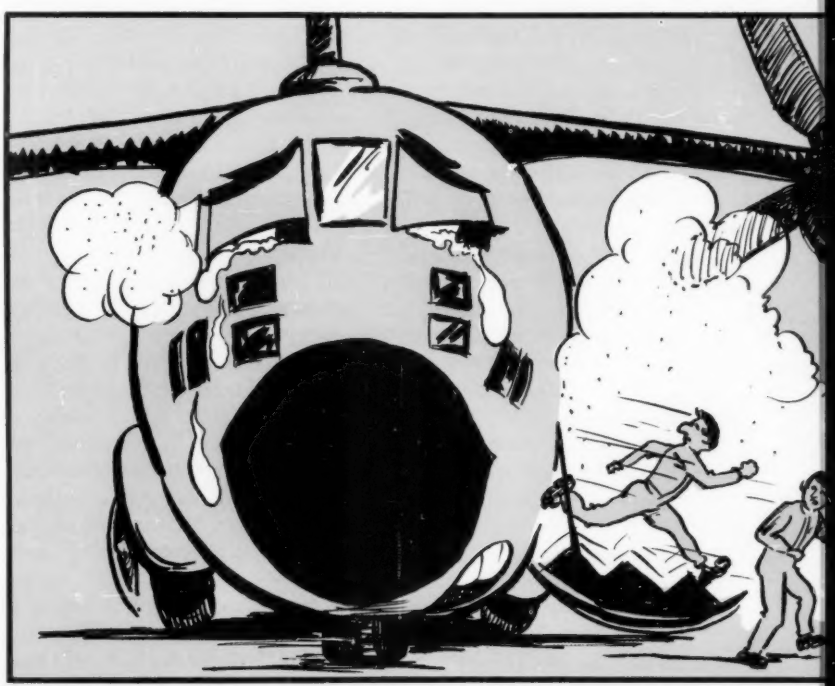
Courtesy: *Airline Pilot*

SMOKE GETS IN YOUR EYES . . . LA . LA . LALA . . .

Preflight and engine start were purely routine until this C-130 made its right turn onto the taxiway. Immediately, smoke entered the flight deck area from the copilot's rudder pedal and circuit breaker panel area. The crew stopped the aircraft, declared an emergency, shut the engines down and passengers and crew wasted no time exiting the plane through the crew entrance door; undoubtedly with a sigh of relief.

Investigation revealed the dual brake control valve cracked (on the normal input connection) after the brake selection switch was positioned to "normal." This crack allowed approximately 2 to 3 gallons of hydraulic fluid to spray from the valve into the pressure area under the flight deck floor.

Smoke in your eyes . . . . may be romantic by candle light—but not . . . .



CHOOSE WHERE YOU SNOOZE!

This unlucky navigator was to augment an EC-130 crew during an 8-hour local mission. After helping the crew clear out of traffic and climb through 10,000 ft MSL, he retired to his bunk hoping to rest before assuming navigator duties for the second half of the trip. The engineer had selected a cabin altitude of 3,200 ft for auto control. As the aircraft approached level off at FL 230, the crew noticed the cabin altitude had climbed to 8,000 ft, still in auto control. After discussing the matter with the aircraft commander, the engineer took manual control of the pressurization system and lowered the cabin altitude to 4,500 MSL. He lowered the cabin altitude at a rate of 500 FPM. While the crew discussed the matter, they failed to notify the 'navigator at rest' of the change in cabin altitude. About three hours later, our unlucky augmentee experienced pain in his ears. After trying vainly to clear his ears, he notified the aircraft commander he didn't think he could continue the mission. The aircraft commander declared an emergency, headed for the nearest landing field with adequate medical facilities, and contacted a flight surgeon by radio. Under guidance from the flight surgeon, the crew raised the cabin altitude to a point which would allow the navigator to clear his ears—15,000 ft MSL.

Although the navigator had not experienced sinus problems or cold symptoms prior to the flight, the flight surgeon explained it is possible to create an earblock simply by lying down with weight on the ear restricting the flow of air in the ear chambers while experiencing altitude change.

Further investigation revealed dirt had accumulated on the pneumatic relay on the outflow valve which caused the valve to stay open with the system in auto. A rare occurrence.

After Deadlines

FORTY YEARS MISHAP-FREE for the Air Force Reserve's 928th Tactical Airlift Group. Currently flying C-130A aircraft at Chicago O'Hare Airport, the 928th becomes the first and only Air Force unit to have 40 years uninterrupted mishap-free flying. The milestone also represents the unit's flying squadron's 40th year of continuous service and 140,000 mishap-free flying hours. The unit is eagerly awaiting arrival of factory-fresh C-130H s to replace the venerable C-130A s. TMF salutes the 928th and offers best wishes for another 40 years of outstanding (and safe) service to the nation.

THERE'S A NEW MILESTONE IN YOUR FUTURE We've established new criteria for Individual Flying Hour Milestone Awards. Beginning January 1988, fixed wing crewmembers will be eligible for awards at 2,500 and 7,500 hours as well as the present 5,000 and 10,000 and above awards. Rotary wing crewmembers will receive a new award at the 1,000 hour point. For more details consult MACR 900-3 and the folks in your local safety office.

ARE YOU READY to survive? A Dover crew recently got the chance to find out if they were survival ready during SOLID SHIELD 87. The 9-man crew was "captured" at Myrtle Beach base operations and transported to a remote, swampy area of coastal South Carolina. Each 3-man group, accompanied by a survival instructor escort, was then evaluated for 4 days on their recall of basic survival techniques. They were able to survive, but evasion techniques were found lacking, with little recall of basic techniques presented in formal training at Fairchild. Think about this the next time you sit down in front of that tape-slide player in the Learning Center. Forgo the nap; you might pick up some long-forgotten pointers.

DO YOU SEE IT? See what? Your monthly issue of *TMF*, of course. We've been getting some comments, especially from overseas units, that crewmembers don't always get a chance to read the world's finest flight safety publication. *TMF* is distributed at the ratio of one per five crewmembers, and one per 20 support members. Obviously, this isn't enough for everyone to have a personal copy—share it!! Have your squadron Customer Account Representative (CAR) check with your Publication Distribution Office (PDO) to make sure you're on order for the appropriate number of copies. If you're not seeing *TMF* regularly, raise a little ¢*%$ and tell them you're not going to take it any more.

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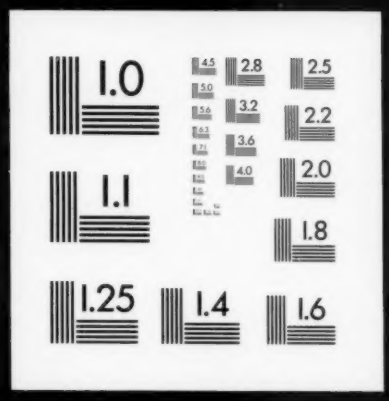
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